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ABSTRACT

In a study based on data collected by Project TALENT, only children and individuals from two-child families were compared on a number of outcome variables in order to explore whether, and in what way, only children differ from children with siblings. A sample of 3221 Project TALENT participants who were in either the ninth or twelth grade in 1960 and who responded to a follow-up survey conducted 11 years after their expected date of high school graduation was selected. This sample, which was stratified on socioeconomic status, was approximately equally divided between males and females. Within each of these four grade/sex subsamples were approximately equal numbers of only children and individuals from two-child families. This sample was, in turn, further limited to persons living with both of their parents in 1960. Independent analyses were carried out within each of the grade/sex subgroups using a set of 131 dependent variables. These dependent variables, which were collected in either 1960 or at the time of the 11-year follow-up survey, were organized into 10 categories: cognitive abilities, personality characteristics, occupational interests, social life, health, activities, education/academic achievement, marriage and childbearing, work and mobility. Although significant differences were found between only children and individuals from two-child families on eight of the above ten categories (no differences were found in terms of health and mobility), none of these differences was found to be large in absolute terms. (Author/MP)

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Final Report

THE CONSEQUENCES OF BEING AN ONLY CHILD: AN ANALYSIS OF PROJECT TALENT DATA

John G. Claudy
William S. Farrell, Jr.
Charles W. Dayton

December, 1979

American Institutes for Research
Post Office Box 1113
Palo Alto, California 94302

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John G. Claudy, Ph.D.
Principal Investigator

William S. Farrell, Jr., Ph.D.

Charles W. Dayton, M.A.

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CHAPTER I

INTRODUCTION

One of the most widely held beliefs in Western society is that the only child is somehow "disadvantaged" relative to children with siblings. The origin of this belief is obscure, but allegedly authoritative pronouncements on the subject can be traced back to at least 1907 when the eminent American psychologist G. Stanley Hall stated, "Being an only child is a disease in itself." Though perhaps not formulated in terms as strong as those used by Hall, opinions such as this have greatly influenced the thinking and even the actions of large numbers of persons. Indeed Solomon, Clare, and Westoff (1956) reported that one of the most frequently cited reasons for having a second child was to prevent the first child from being an only child.

In contrast with these negative beliefs about the only child is the report of the Commission on Population Growth and the American Future (1972). This report states that if the population size of the United States is to be stabilized, or reduced, there must be a decrease in average family size. This reduction must be accompanied by an increase in the number and proportion of one-child families at the expense of multi-child families. Given the strength and pervasiveness of negative beliefs about only children, will it be possible to bring about such an increase in their number? The answer to this question is almost certainly yes - if certain actions are taken. An example of a country which has been able to bring about a dramatic decrease in its birth rate is Singapore. Their program is based on a combination of education and legislation, though there are those who would say that Draconian measures were utilized to

achieve this end. It is doubtful if the sort of program implemented in Singapore could be established in the United States. Thus, any viable effort to reduce the U.S. birth rate will almost certainly rely on an education and information program and not on restrictive laws.

During both the recent and more distant past a large number of reports and articles relating family size and/or birth order to characteristics of individuals, both children and adults, have been published. (See Chapter II of this report for a review of the most relevant studies.) These studies, regardless of their results, should be of particular relevance in the development of the education and information program referred to above. However, because of a number of problems with either their design or execution, they have failed to provide an unequivocal answer to the question of how the only child is different, if indeed this is the case.

Thus the basic purpose of the project reported herein is to seek valid data on the consequences of being an only child. That is, we sought to explore whether and in what ways only children differ from children with siblings. To accomplish this end, data collected as a part of Project TALENT were used. Project TALENT is a large-scale, long-term research project intended to aid in understanding the nature and development of the talents of America's young men and women. Project TALENT was initiated in 1960 when the students attending a representative 4.5% sample of U.S. high schools were administered a battery of tests and questionnaires over a two day period. Some 400,000 students in grades 9 through 12 attending the 1,225 selected schools comprised the sample. The 1960 battery tested students' aptitudes, achievements, interests, and activities. In addition, some 395 questions were asked about the students' background, educational and occupational expectations, attitudes, social life, work

habits, etc. Follow-up surveys, conducted one, five, and eleven years after the expected year of high school graduation, have inquired about such information as age at marriage, marital status, number of children, post-high school education, occupation and other activities. Among the questions asked in 1960 were several related to birth order and family size. The results to be presented here are based on subsamples of the ninth and twelfth grade Project TALENT participants, most of whom were 15 or 18 years of age at the time they took the test battery in 1960.

It appears justified to assert that no other data base exists which can match TALENT's simultaneous satisfaction of the following criteria: (a) a large heterogeneous, nationally representative sample tested with (b) a wide variety of cognitive, psychological, educational, occupational, and demographic indices measured (c) longitudinally over a multi-year span. Thus the major utility of the TALENT data base for studying the consequences of being an only child lies in the availability in the data base of large, comparable samples of only children and their peers from multi-child families. The number of only and non-only children is large enough so that differential consequences for the two groups can be reliably studied. Moreover, data from the only children and the comparison group are available for several points in the groups' adolescent and young adult lives, so that long-term consequences of being an only child can be investigated. These data are comprehensive enough to include a wide and rich variety of cognitive, socio-psychological, achievement, and demographic consequences of being an only child for the individuals involved.

This is not to say that findings from the present study contain the complete picture with respect to such consequences. Project TALENT's data base was not specifically designed for the present study and therefore

lacks information on a number of variables which would have been included in an ideal study. However, the very real advantages realized in the use of extant data compensate for this lack. Another limitation of the study lies in the fact that the TALENT population consists of individuals who were in grades 9 through 12 in 1960; thus most of the findings from the study are only generalizable to the population of people reaching Grade 9. Because schooling in this country is generally mandatory through age 16, the TALENT population remains close to being nationally representative, especially for the 1960 ninth graders, and this limitation is not a major one. Perhaps more serious is the fact that findings from the study only apply to individuals born in the early 1940s. Of course, to study the long-term consequences of being an only child, one must of necessity wait 15-30 years. In this sense the present study's findings are as current as theoretically possible.

Despite these limitations and because of the previously described strengths of the data base, it is hoped that this report carries the state of knowledge a few steps forward.

CHAPTER II

REVIEW OF RELEVANT LITERATURE

Considerable effort has been devoted since the turn of the century to studying the outcomes experienced by children of various family sizes and in different birth positions. Few of the studies, however, have systematically attempted to determine how only children compare to children in particular birth positions, in order to assess the relative advantages and disadvantages accruing to onlies and to other children. Major research efforts relating to the effects of family size and birth order are reviewed here, along with theoretical explanations of the observed results. A separate section of the review will summarize the smaller body of literature concerned specifically with only children.

Family Size

The effects of family size have been studied for a wide range of variables, including intelligence, academic achievement, personality, mental and physical health, and family structure. As a rule, the results tend to suggest that smaller families are advantaged relative to larger families.

The outcome that has been most widely studied with respect to family size is intelligence. In 1923, Bradford administered the Otis Intelligence Test to 393 British 10-year olds. The correlation between family size and measured intelligence was -.25, a finding that has been replicated almost without fail in dozens of subsequent studies. For example, Maxwell (1954) reported the results of a large study in which 70,805 Scottish 11-year olds were administered a group intelligence test, while a

subsample was given the Terman-Merrill Binet Test. Correlations between IQ and family size were -.28 and -.32, respectively, for the two tests. A similar large-scale test in France involved 95,277 6-12 year olds (Gille, Henry, et. al., 1956). Again, a strong tendency for intelligence to decrease with larger families was observed in the low socio-economic status (SES) groups, but this negative correlation declined in the professional class.

In perhaps the largest effort of its kind, all males in the Netherlands who turned 19 years old between 1963 and 1966 (N=400,000) were given the Raven Progressive Matrices test. Belmont and Marolla (1973) recomputed the results of this study and found that intellectual performance declined with family size. Further, this effect was found within each of three SES levels as indicated by fathers' occupation (farm, manual, non-manual). Similar results have been obtained, both with and without SES controls, by Higgins, Reed and Reed (1962), Dandes and Dow (1969), and Eysenck and Cookson (1970), among others. Although some investigators disagree with these results (e.g., Warburton, 1952; McCall, 1971, 1972), the bulk of evidence suggests that members of larger families are lower in intellectual performance than members of smaller families.

Differences between children from large and small families have been found in other areas as well. It is not surprising, given the findings on intelligence, that there also appears to be a negative correlation between family size and academic achievement (Eysenck & Cookson, 1970; Damrin, 1949; Schachter, 1963). Somewhat more surprising is the possibility that this relationship holds even when intelligence is partialed out (Chopra, 1966). The form of the relationship is probably sensitive to socio-economic status, however. Poole and Kuhn (1973), in a study of 8,000 1960

British college graduates, found that educational attainment was inversely related to family size among lower class students but not among middle class students. In general, however, the relationship between family size and educational achievement is probably similar to that obtained with intellectual performance: children from smaller families are advantaged.

The effects of family size on the personality of children has been the subject of considerable debate, much of it based on stereotypes and anecdotal evidence. For example, the Viennese psychiatrist Wexberg concluded that only children "have a boundless egotism; they tyrannize over their friends, and will suffer no gods besides themselves" (Fenton, 1928, p. 547). Many of the studies relating family size to personality have specifically compared only to non-only children; these studies will be discussed in a subsequent section of the review. Several researchers have examined family size per se, however. Turner (1962) studied a sample of 2,175 Los Angeles high school seniors. He found that educational and material aspirations correlated -.13 with family size for the males in this group (with SES controlled); no such relationship was found for females. Similar results were obtained by Rehberg and Westby (1967).

Rosen (1961) found some evidence in two samples of pre-adolescents that need for achievement is higher for children from small families; this tendency is reduced among the middle class, however. Similarly, Masterson (1971) found that need for approval increased almost linearly with family size among college students. Finally, Waldrop and Bell (1964) reported one of the strongest findings ever obtained in the area of family size. In a sample of nursery school boys, they found a correlation of .51 between family size and the seeking of contact with the teacher; the magnitude of the correlation was similar within SES groupings. A picture begins to

emerge, then, of children from smaller families being somewhat more ambitious and independent than children from larger families.

The picture is reinforced by studies suggesting that children from smaller familes have greater self-esteem (Sears, 1970), are more outgoing (Eysenck & Cookson, 1970), may be more popular (Damrin, 1949), and are perhaps more agressive (Stagner & Katzoff, 1936) than children from larger families. These conclusions about children from small families must be viewed tentatively, however, since few of the above-mentioned studies controlled for social class.

In terms of physical health, children from small families again appear to be better off than their large-family peers. For example, there is a negative relationship between family size and children's height (Simpson, 1964; Tanner, 1961). Benech, Mathieu, and Schreider (1960) found that weight and strength, as well as height, decline with increasing family size. Children from smaller families appear to reach sexual maturity earlier than children from larger families (Douglas & Simpson, 1964), and are subject to fewer respiratory diseases (Dingle, Badger & Jordan, 1964).

The apparent advantages accruing to smaller families with respect to physical health may not carry over into the area of mental health. Gregory (1958), for example, found evidence that schizophrenics tend to come from smaller families. Mintz (1965) reached a similar conclusion based on a study of schizophrenic children in a Boston hospital. In general, however, the data on mental health are among the most inconsistent in the family size literature. Birtchnell (1970) found no relation between family size and several categories of mental illness; Hare and Price (1965) obtained similar negative results in a study of family size and behavior disorders. On the other hand, several investigators have

reported a positive correlation between family size and delinquency among children. Tuckman and Regan (1967) found that children from large families were more often involved in truancy, arson, cheating, and stealing. In a very carefully controlled study Glueck and Glueck (1950) also found that delinquents tended to come from larger families, but Ferguson (1952) noted that this relationship declined when he controlled for crowding in the home -- that is, children from large, non-crowded families were no more likely to be delinquent than children from small families.

Summary. Despite methodological drawbacks in much of the research on family size effects (e.g., lack of control for SES), several reasonably firm conclusions can be reached. Compared to children from large families, those from small families appear to be more intelligent, healthier, and more ambitious and independent. They typically do better in school and may be less prone to anti-social behavior. They have high self-esteem, but may tend to be overrepresented among schizophrenics. Possible reasons for these differences will be discussed after we survey briefly a closely related body of research: that dealing with birth order effects.

Birth Order

Family size and birth order are intimately linked: higher birth orders can only occur in larger families. Despite the obvious relationship between the two variables (Eysenck & Cookson, 1970, reported a correlation of .70), some investigators have neglected to control for one while looking at effects of the other. The potential seriousness of this omission is highlighted by Adams (1972), who described a sample of completed families that he was studying. The average family had 3.2

offspring. If only children were omitted, the median oldest and youngest child came from sibships of 2.5. The median intermediate child, however, came from a sibship of 4.4 children. In a sample such as this (which is probably the rule, not the exception), conclusions about birth order are likely to be confounded with family size effects -- and vice-versa. Nevertheless, there does exist a set of findings on birth order that is reasonably consistent and agreed-upon. These are described now.

As was the case with family size, the most frequently studied correlate of birth order is intelligence. Studies relating these two variables are important, because they show that something other than inheritance can affect children's intelligence (as Belmont and Marolla, 1973, pointed out, there is no known way in which genetic characteristics can be associated with birth order). Belmont and Marolla themselves provided perhaps the clearest example of a birth order/intelligence relationship, finding that intelligence tends to diminish with later birth orders. This result held within each of three SES groups. Similarly, first-borns demonstrate greater educational achievement than later-borns (Schachter, 1963; Altus, 1965; Greene & Clarke, 1968).

Interestingly, however, several studies have reported either no differences or an advantage for later-borns in the motivation to achieve (Elder, 1962; Rosen, 1961; Rosenfeld, ... 5). Thus the higher educational attainment of first-borns may be purely a function of their intelligence.

With regard to personality characteristics, the findings are much less coherent. A passage from Adams' review of birth order effects is worth citing in this context:

"Later-borns are found by Eisenman and Cherry (1970) to be more authoritarian, while Greenberg et. al. (1963) report no birth

order differences in authoritarianism. More last-born females are schizophrenic (Schooler, 1964), or there are no such birth order differences (Granville-Grossman, 1966; Erlenmeyer-Kimling, 1969). Later-born males are more often schizophrenic (Granville-Grossman, 1966), or this is true in larger families but opposite in small families (Barry and Barry, 1967) or it is true in the middle class but opposite in the working-class family (Schooler, 1964). Later-born females are overrepresented among alcoholics (Schachter, 1959; deLint, 1964), or there are no birth order differences in alcoholism (Smart, 1963). Finally, first and last borns are more likely than middle children to commit suicide, according to Lester (1970)." (1972, p. 418)

Clearly, we would be well advised to agree with Stroup and Hunter (1965) that there is little consistent evidence linking birth order and personality characteristics.

In an area closely related to personality (but treated separately by Adams, 1972), it has been found that first-borns are more affiliative (Dember, 1964) and more dependent (Schachter, 1964; Rothbart, 1971) than later-borns. In addition, it seems likely that first-borns are more conforming than later-borns (Kammeyer, 1966; Rhine, 1968).

Finally, health and physical characteristics appear to depend to some extent upon birth order. For example, Grant (1964) conducted a study of 1310 London children and found that those in later birth ranks tended to be slightly taller than those born earlier. This finding was later replicated by Dann and Roberts (1969). Even within individual families there is a tendency for a child to be shorter than his next younger sibling

(Grant, 1964). There is some evidence that later-born children suffer poorer health than early-born children (Dingle et. al., 1964), but these effects may be too inextricably bound up with family size to warrant serious consideration.

In summary, the findings on birth order are not very different from what one might expect, given the previously reported findings on family size and the close relationship between these two variables. Thus, first- and early-born children (and children from small families) are more intelligent, perform better in school, and are perhaps healthier (though shorter) than later-born children and children from larger families. The unique effects of birth order are more evident in personality-related characteristics. Early-borns (and especially first-borns) are more affiliative and dependent than later-borns, while children from small families on the average tend to be more ambitious and independent than those from larger families. This last observation may represent one of the few instances where family size and birth order effects diverge, in that children from large families resemble first- and early-borns on these characteristics, rather than later-borns.

We turn now to a discussion of some of the theoretical explanations for the findings on birth order and family size.

Theories of Birth Order and Family Size Effects

Explanations of the differences found for children from various family sizes and birth positions have tended to fall into one of four categories: economics, parental attention, physiological, and sibling relations (confluence). We will postpone discussion of the confluence theory and

bring it up later with reference to only children; the other three types of theory are described below.

Physiological theories. Unfortunately, theories of this type have been used in contradictory ways to explain family size and birth order effects. On the one hand, early-borns and small family children are said to benefit from the "richer uterine environment" provided by the young mother (Bayer, 1967), thus enjoying greater health and intelligence. On the other hand, it has been suggested that later-borns are delivered more easily (because of the mother's experience), with less need for forceps or caesarians. In addition, it is likely that many parents cease having children if the first one or two are found to suffer mental or physical defects, thus increasing (in a statistical sense) the health and well-being of later-borns. Until more empirical work is done, there is little that can be said concerning physiological causes of birth order and family size effects.

Economic theories. A small family is likely to be capable of devoting more resources per child to food, health care, and education than is a large family. Birth order consequences are less straightforward. Some have argued that first-borns, since they reach college age first, are more likely to receive family funds for attendance. Others have suggested that later-borns have a better opportunity to attend college: their parents are likely to be earning more money by then, and they could receive financial help from older siblings. Adams (1972) offers a neat reconciliation of these views. He suggests that first-borns in high SES families (which tend to be small) are more likely to receive parental encouragement and finance for college, while last-borns in low SES families (which tend to be large) are more likely to thus benefit. There is some evidence (Blau &

Duncan, 1967) that this is in fact the case. In general, however, many of the advantages accruing to small families and low birth orders are directly related to economic considerations.

Parental attention. As with financial resources, parents have only a limited amount of time and attention that can be devoted to their children. The more children there are, the less the parents can be involved with each one. In addition to the increased attention and affection that children from smaller families may receive, there is evidence that they have more opportunities to model their language behavior on that of their parents. The result is speeded or increased linguistic development, which in turn can allow the child to perform better academically.

With regard to birth order, it has been suggested that parents may be overly protective and indulgent of their first-born child. This "anxious parent" theory (Roberts, 1938) holds that the first-born, as a result of this attention, may be impeded in the development of initiative, independence, and self-sufficiency. Evidence was presented earlier that first-borns do in fact appear to be more dependent and affiliative than later-borns.

Implications. Taken at face value, the theories and findings with regard to birth order and family size would suggest that only children ought to be extremely advantaged. They are, by definition, first-borns and members of the smallest possible family. The findings to be described below leave little doubt that onlies are in fact unique; they may not be quite as well off as one might expect, however. One possible reason for this is that only children are last-borns as well as first-borns. This fact is often ignored by investigators who lump firsts and onlies together

in their analyses; the implications are extensive and will be dealt with below.

Only Children

As noted in the introduction, only children (and their parents) have borne the brunt of considerable negative stereotyping. Although the percentages of women intending to have one child is increasing (from 6% in 1955 to 11% in 1975; Falbo, 1979), most Americans still feel uneasy about the prospect of a one-child family. In a survey conducted in 1973, Griffith found that 71 percent of the women and 57 percent of the men felt it "would be bad for the child if they had only one child." Given these views, it would be wise to determine empirically the extent to which only children are advantaged or disadvantaged with respect to non-only children. We now review several attempts to answer this question.

Although research on only children suffers from many of the same drawbacks seen in research on family size and birth order (e.g., parental age differences, lack of SES controls), there is beginning to emerge a relatively consistent picture of the only child. In terms of intelligence, only children are sometimes found to be superior to those from all other birth positions (Cropley & Ahlers, 1974). More often, however, they rank in an intermediate position between first-borns and later-borns. In the massive Belmont and Marolla (1973) study, onlies were found to be lower in intelligence than first-borns (up to family size four) and second-borns (up to family size three). They were more intelligent than first and second-borns in large families and those in third or higher birth positions. Interestingly, only children in Belmont and Marolla's

study resembled last-borns most closely: in every birth order except the third, the last-born was less intelligent than the next-to-last.

These findings have been replicated frequently. Claudy (1976), for example, found that onlies are lower in intelligence than the average child from two-child families, and midway between the averages for three and four-child families. Claudy, Gross, and Strause (1974) obtained similar results controlling for SES. Lunneborg (1968) gave a sample of 5,401 high school seniors a battery of 12 pre-college tests. She showed that where significant birth order differences occurred, first-borns were superior to onlies, who in turn were not different from later-borns; this was true for both sexes.

Few studies have compared onlies to non-onlies in terms of academic achievement. Those that have report an advantage for only children (Poole, 1974; Schachter, 1963). This finding is somewhat puzzling if we accept that onlies are less intelligent than some non-onlies; it may reflect the increased parental encouragement and/or finances available to only children.

In terms of personality, a review of the early psychoanalytic literature might cause one to wonder how only children survive to become adults. The empirical findings are less pessimistic. In an early study, Guilford and Worcester (1930) found that onlies were equal or superior to non-onlies in 14 out of 15 personality dimensions -- they were superior in initiative, for example. Burke (1956) matched onlies and non-onlies on intelligence, education, religious background, and social class (college women formed the samples). A battery of psychoanalytic and personality tests revealed few significant differences between the two groups.

The findings with respect to the dependence/independence of only children are not completely consistent, but the general tenor of the results is that only children may be slightly more independent and self-sufficient than non-only children (Fenton, 1928; Stott, 1939; Masterson, 1971). Since first-borns are thought to be less independent than later-borns, this may be another piece of evidence that onlies are more closely related to last-borns than to first-borns. Other findings in the area of personality suggest that onlies have higher self-esteem (Rosenberg, 1965), may be more socially outgoing (Bonney, 1942), and may exhibit more social dominance (Stagner & Katzoff, 1936) than non-onlies. Terhune (1976) summarizes these findings and concludes that onlies are best characterized as possessing a core dimension of drive and vitality.

The results are somewhat more negative regarding the mental health of only children. Wahl (1956), Smith and McIntyre (1963), and Wintz (1965) have all found that only children tend to be overrepresented among schizophrenics; Gregory (1965) reported that onlies are also overrepresented among alcoholics. The findings on schizophrenia may relate to factors other than family size. Schizophrenics are known to have low fertility; schizophrenic parents are thus more likely to have one-child families. If, as is suspected, schizophrenia is partially under genetic control, this could account in part for the increased rate of schizophrenia among only children. Other investigators have suggested instead that the only child receives the full force of his or her parents' hopes, drives, and expectations. This in itself could lead to later problems in adjustment, especially if the child is unable to live up to the parents' expectations. The same mechanism may be implicated in the finding that only children tend more to obesity than non-only children (Bruch &

Touraine, 1940; Whitelaw, 1971). With that exception, only children generally seem to share the health advantages found for small families.

In summary, only children represent somewhat of an anomaly with regard to family size and birth order effects. They come from small families and resemble small family children in several ways: they are academic achievers, independent, healthy, and have a slightly higher than average tendency to schizophrenia. Unlike children from small families, however, they also tend toward obesity and alcoholism. In terms of birth order, they share characteristics of first-borns (academic achievement, health) last-borns (independence), and middle-borns (intelligence). In addition, they possess some characteristics, such as self-esteem and dominance, that have not as yet been related to family size and birth order in general.

Many of these findings can be explained by the theories presented earlier, for example, economics (onlies do not have to share resources) and parental attention (onlies get a lot, perhaps too much in some cases). One of the most unexpected findings, that concerning the intelligence of only children, has been dealt with in an ingenious theory of family size and birth order effects by Zajonc (1976). We turn now to a discussion of that theory.

The Confluence Theory

Zajonc (1976) presented a theory to explain family size and birth order effects on the intelligence of children. The theory postulates that these effects are accounted for by the intellectual environment provided by the home. That environment is at its peak for two parents without children. As children enter the family, the intellectual environment is "diluted" (in a sense, the family's mean IQ diminishes) to a greater or lesser

extent, depending on the number and spacing of children. Without going into details, the theory predicts that for families where spacing between children is not too long, there will be a drop in average intellectual ability as family size increases. Further, there will be a decline in intellectual ability from first-born to last-born within families of a given size.

Zajonc's model has proved remarkably accurate in accounting for the variance in IQ scores for aggregate family size and birth order data, although there is a recent controversy concerning the model's ability to handle individual (disaggregated) data (Page & Grandon, 1979). More interestingly, however, the confluence model also predicts that only children should have the highest intellectual ability of any family size grouping. As we have seen, they do not; they typically perform at the level of intermediate children in larger families. To account for this discrepancy, Zajonc expanded the confluence model, postulating that the intellectual ability of the only child is somewhat retarded because he or she does not have younger siblings to interact with in a "teaching" manner. This notion receives added support from the finding that the drop in intellectual ability between the next-to-last-born child and the last-born child is greater than between all other adjacent pairs. This, it is suggested, could occur because the last-born child (like the only child) has no younger siblings to teach.

The "teaching" explanation for the discrepant intellectual ability of only children is currently under scrutiny (Falbo, 1979). Nonetheless, a combination of this mechanism and some of the more traditional theories of birth order and family size effects can provide a coherent basis for discussing the cognitive and psychological functioning of the only child.

CHAPTER III

METHODOLOGY

Sample Selection

The individuals constituting the sample used in this study are a subsample of Project TALENT participants who were in either the ninth or twelfth grade in 1960 and who responded to the follow-up survey conducted eleven years after their expected date of high school graduation. There were a total of 48,987 individuals who met these two criteria. From this large sample of cases a stratified random subsample of 12,400 cases was selected so as to simultaneously match, as closely as possible, the parameters in the middle column below:

Stratification Variables	Target Marginal Parameter	Obtained Marginal Parameter
Ninth graders in 1960	50%	49.6%
Twelfth graders in 1960	50%	50.4%
Females	50%	50.6%
Males	50%	49.4%
Only children	18.1%	16.0%*
First-born of two	9.1%	9.8%
Second-born of two	9.1%	9.3%
First-born of three	9.1%	9.1%
Second-born of three	9.1%	8.8%
Third-born of three	9.1%	8.5%
First-born of four or more	9.1%	9.6%*

Second-born of four or more	9.1%	9.2%*
Not first, second or last-born of four or more	9.1%	11.0%*
Last-born of four or more	9.1%	8.7%*
Parental family in upper quarter on SES	33.3%	31.7%*
Parental family in middle half on SES	33.3%	36.6%
Parental family in lower quarter on SES	33.3%	31.7%*
Living with both parents in 1960	68%	74.1%
Living with one parent in 1960	16%	15.1%*
Living with one parent and stepparent in 1960	8%	6.0%*
Other living situation in 1960	8%	4.8%*

Based on the five stratification variables listed above, a total of 480 sampling cells are defined. For each of these sampling cells, a target number of cases based on the desired target marginal parameters was calculated. These target numbers served to guide the selection of cases. This approach insures that, for example, approximately 50% of the cases were ninth graders; that approximately 50% of the ninth graders were females; that approximately 18.1% of the ninth grade females were only children, etc.

The right-hand column above presents the actual marginal parameters obtained when the sample was selected. Note that the strata marked with an asterisk (*) are overrepresented in the sample relative to their occur-

rence in the population, and in certain cases include virtually all the available Project TALENT cases.

The actual sample of participants used for the analyses herein reported was later further limited to only children and children from two-child families who were living with both parents in 1960. There were 3,221 individuals in this final sample divided as follows:

Ninth grade female only children	342
Ninth grade females from two-child families	441
Ninth grade male only children	366
Ninth grade males from two-child families	428
Twelfth grade female only children	382
Twelfth grade females from two-child families	433
Twelfth grade male only children	399
Twelfth grade males from two-child families	430

Our ultimate decision to limit the analyses to Project TALENT participants who were only children or children from two-child families who were living with both parents in 1960, rather than the larger sample described earlier, was based on several considerations. Primary among these was the fact that this is a study of the consequences of being an only child and not of family size per se. Accordingly, though some sort of comparison group is required, it was felt that inclusion of multiple alternatives to the single child family would tend to obscure the meaning of the results and/or focus attention on family size rather than only child effects.

The two most viable alternatives to having an only child are having no children or having two children. Since the Project TALENT sample contains

no individuals from families without children, the two-child family was selected as the comparison group. Because of the sampling procedure employed, the children from two-child families are divided approximately equally between first-borns and second-borns. This leads to the question of whether the only children should be compared with first-borns of two, second-borns of two, or both. Our final decision was to combine all children from two-child families into a single comparison group. This decision was based on the obvious, but nonetheless important fact that all two-child families, except those of twins, are composed of a first and a second-born child. Thus even though first-borns of two may differ from second-borns of two, and they may thus differ differentially from only children, a couple with two children cannot choose to have two first borns or two second borns. They must have one of each.

A third decision was that within the comparison group of children from two-child families, no attempt would be made to take the sex of the sibling into account. Thus, for example, within the group of ninth grade males from two-child families, the siblings could be younger or older, male or female. This decision was made because, given the current state of medical science, parents have no control over the sex of their offspring.

A factor which would have been controlled, but was not because the necessary information is lacking in the Project TALENT data, is age spacing between siblings. Accordingly, the spacing between the comparison group members and their siblings can be as little as nine months to as much as twenty or more years. To the extent that a large proportion of the comparison group members are greatly different in age from their

sibling, they are more likely to be similar to only chlldren, thus masking differences between the two groups.

A final decision reflecting on the design of the study was to limit the sample to individuals living with both of their parents in 1960. This step was taken in an attempt to eliminate one of the potential confounding factors in only child research, namely that a higher proportion of only children come from one-parent families. The strength of this confounding is illustrated in the following data based on a random sample of 1,000 Project TALENT ninth graders:

Number of Children in Family	Percent Living with Both Parents
1	71%
2	85%
3	83%
4 or more	77%

Falbo (1978) in particular has postulated that this higher prevalence of one-parent families, particularly female heads of household, may account for at least some of the only child decrement in performance found by Zajonc (Zajonc & Markus, 1975).

The study sample thus consisted of two groups of Project TALENT participants who responded to the eleven year follow-up survey:

- Only children who were living with both parents in 1960
- Children from two-child families, regardless of the sex of and their age relationship with their sibling, who were living with both parents in 1960.

Both of these groups were further divided into four subgroups:

Ninth grade females

Ninth grade males

Twelfth grade females

Twelfth grade males

All analyses were carried out within these grade/sex subgroups.

The classification of the study cases into the various cells of the sampling design was based on the following Student Information Blank (SIB) questions asked of Project TALENT participants in 1960:

220. With whom are you now living; that is, who are the heads of the house?

A. Mother and father
B. Mother only
C. Father only
D. Sometimes with my mother, sometimes with my father
E. Mother and stepfather
F. Father and stepmother
G. Grandparents, aunt, uncle, or cousins
H. Brother or sister
I. Foster parents (not relatives)
J. Someone not listed above

221. What is the total number of living children in your family? Include yourself, together with all full brothers and sisters, half-brothers and sisters, stepbrothers and sisters, and foster brothers and sisters. Include those not now living in your home.

A. One
B. Two
C. Three
D. Four
E. Five
F. Six
G. Seven
H. Eight
I. Nine
J. Ten
K. Eleven
L. Twelve or more

222. How many of your brothers, half-brothers, foster brothers, or step-brothers are older than you? Do not count your own twin brother.

A. None
B. One
C. Two
D. Three
E. Four
F. Five
G. Six
H. Seven
I. Eight
J. Nine
K. Ten
L. Eleven or more

223. How many of your sisters, half-sisters, foster sisters, or step-sisters are older than you? Do not count your own twin sister.

A. None
B. One
C. Two
D. Three
E. Four
F. Five
G. Six
H. Seven
I. Eight
J. Nine
K. Ten
L. Eleven or more

Examination of questions 221, 222 and 223 reveals that the number of children in the family is not necessarily based on the number of children borne by the parents, but rather by the number of children in the household. In most cases all the children in the household will be the natural children of the parents, but this potentially broader definition makes Project TALENT data inappropriate for testing hypotheses about differential intrauterine or physiological effects.

As would be expected there were individuals who did not respond consistently to questions 221, 222, and 223. For example an individual might indicate that there are two living children in his/her family on

question 221, and then indicate on questions 222 and 223 that he/she has two older sisters and one older brother. Such persons could not be properly categorized and were eliminated from the study.

A critical question regarding the use of longitudinal data, such as those provided by Project TALENT, is whether differential attrition or non-response rates reduce or destroy the comparability of the various subgroups. Accordingly this issue was examined prior to conducting the analyses described herein. On the basis of this examination we can state that, while there is selective attrition in the TALENT sample, there does not appear to be differential selective attrition within the two groups studied. That is, while the typical eleven-year follow-up respondent is somewhat higher than the typical 1960 TALENT participant in terms of academic aptitude and SES, only children and individuals from two-child families do not appear to have been affected differently relative to their 1960 groups. Thus we feel c[illegible]ent in our use of Project TALENT data.

Dependent Variables

A total of 131 dependent variables covering a wide range of possible consequences were examined in this study. The majority of these data were collected during the initial data collection in 1960 when the Project TALENT participants were in high school. The remaining data were collected by mailed questionnaires in either 1971 or 1974 when the respondents were about 29 years old. Data on a larger number of variables are available from 1960 because the initial 1960 survey required two days of the participants' time while the eleven-year follow-up survey required an hour or less of the participants' time. The dependent variables selected for inclusion in the study are not an exhaustive set of the

possible variables. However, they do represent those variables available in Project TALENT which, in the opinion of the project staff and based on our review of the related literature, present the greatest probability of showing significant differences, if such differences exist. Rather than describing the dependent variables here, we will postpone that until the following chapter on Results.

Analysis Procedures

The primary statistical analysis procedure employed was analysis of covariance with the effects of socio-economic status being covaried out. For those dependent variables which were measured on nominal or ordinal scales, chi square analyses were performed. Our initial plan was to control socio-economic status effects experimentally through sample selection. However, a prelimimary comparison of only children with children from two-child families revealed that these two groups significantly differed on SES in two of the four grade/sex combinations - ninth grade females and ninth grade males. Accordingly, to insure that SES effects had been removed, further analyses were run with SES covaried out.

All analyses were carried out using the Statistical Package for the Social Sciences (SPSS) computer program library, as implemented at the Stanford University Center for Information Processing.

CHAPTER IV

RESULTS

In this chapter we will present the results of the analyses carried out during this study. For convenience and clarity of presentation we have organized the variables into ten categories, each of which will be discussed in turn. In the following chapter we will attempt to draw together and summarize our results and their implications. The ten catgories of variables are as follows:

Cognitive Abilities

Personality Characteristics

Occupational Interests

Social Life

Health-Related

Activities

Education/Academic Achievement

Marriage and Childbearing

Work-Related

Mobility

Within each of the categories except the first four, for which there are no follow-up variables, and the last category, for which there are no 1960 variables, variables collected in 1960 are presented first followed by variables collected during the follow-up. Because the Project TALENT variables are not commonly available and their statistical properties are thus relatively unknown, we have chosen not to present the actual means obtained by only children and individuals from two-child families. Rather, for each of the four grade/sex groups we present an indication of

whether onlies are higher than, lower than, or equal to individuals from two-child families (1>2, 2>1, =). Because, as will be seen later, the majority of the comparisons between only children and individuals from two-child families are non-significant, we feel this mode of presentation facilitates identification and examination of trends. A second column for each grade/sex group indicates the level of statistical significance achieved.

Cognitive Abilities

Perhaps the least expected set of findings in the study arose in the area of cognitive abilities. As reported earlier, several theories of birth order and family size (including the confluence theory) predict that only children and first-borns should be more intelligent than later-borns or children from larger families. It has been found repeatedly, however, that the intellectual functioning of onlies is below expectations. Zajonc (1976) expanded the confluence theory to account for this, suggesting that onlies lack the intellectually beneficial opportunity to teach younger siblings.

Contrary to most of the previous findings, only children in the present study performed better than the average of two-child families on a variety of cognitive tasks. The variables in the cognitive cluster included creativity, abstract reasoning, mechanical reasoning, mathematics, English, reading comprehension, and general/specific information, and a composite measure of IQ, all measured in 1960. Of the 32 possible differences between onlies and non-onlies (eight measures times four groups), onlies scored higher in 25 cases, were equal in four cases, and scored lower in only three cases, as shown in Table 1. A sign test applied to these directionality differences shows that onlies were significantly higher in cognitive abilities overall ($p<.001$). In addition, four of the individual differences were significant -- these were I.Q., mathematics, reading comprehension, and general/specific information. All involved ninth grade females, and onlies scored higher than non-onlies in each instance.

Why was this pattern of results obtained? A likely explanation can be found in the fact that only children in the present study (as well as non-onlies) were chosen to come from families in which both parents were

present. A recent study by Falbo (1978) suggests that a considerable portion of the intellectual deficit found for only children results from their being overrepresented among single-parent families. (See supporting data from Project TALENT in Chapter III.) Falbo presented her argument to counter the notion that onlies suffer because they lack the opportunity to tutor younger siblings. It should be noted, however, that the original confluence model (as opposed to the expanded "tutoring" version) can handle the single-parent findings quite well: the intellectual environment of a family declines markedly when one parent leaves. Moreover, the "tutoring" explanation accounts for last-child as well as only-child deficits; Falbo's argument would be strengthened if last children were also found to be overrepresented in single-parent homes.

In any event, the present study is the first to look specifically at only children from two-parent homes. Far from being disadvantaged, the onlies in this sample appear to be at least equal, and probably superior to those from two-child families in terms of cognitive and intellectual functioning. At the least, this finding casts some doubt on "tutoring" explanations of intellectual development; at the most, it suggests that only children from normal family situations are as intellectually advantaged as the original confluence theory would predict.

TABLE 1

Cognitive Abilities

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Total, 395 item general/specific information test	1 > 2	**	1 > 2		1 > 2		1 > 2	
Reading comprehension	1 > 2	**	1 > 2		1 > 2		1 > 2	
Total, 5 part English test	1 > 2		1 > 2		2 > 1		1 > 2	
Total, 3 part Math test	1 > 2	*	1 > 2		1 > 2		1 > 2	
Mechanical reasoning	1 > 2		2 > 1		=		1 > 2	
Abstract reasoning	1 > 2		=		=		1 > 2	
Creativity	1 > 2		=		2 > 1		1 > 2	
Composite IQ score	1 > 2	*	1 > 2		1 > 2		1 > 2	

* = Significant at .05 level.

** = Significant at .01 level.

Personality Characteristics

An important part of the 1960 TALENT battery of tests and measures is the Student Activities Inventory. This inventory consists of 150 self-descriptive items dealing with aspects of a student's personality. Students were asked to rate how well each item described them, using a 5-point scale that ranged from "extremely well" to "not very well."

The items have been grouped into 10 scales, with each scale consisting of from five to 24 items. The scales are Calmness, Culture, Impulsiveness, Leadership, Maturity, Self-Confidence, Sociability, Social Sensitivity, Tidiness, and Vigor. Examples of items forming the Calmness scale are "I am calm"; "People consider me level-headed"; and "I often lose my temper" (scored negatively). Scale scores were derived by summing individual item scores within a scale.

Although the Student Activities Inventory is not strictly a personality measure, it resembles one very closely and will be treated as such in the present discussion. Table 2 shows the differences between only and non-only children on each of the Inventory's 10 scales. Directionality in the table refers to a "greater amount" of the trait in question, that is, more calmness, more sociability, and so on.

No significant differences (or non-significant trends) were found between onlies and the average of two-child families in calmness, impulsiveness, leadership, self-confidence, or vigor. This is somewhat unexpected, since onlies have been characterized as (a) more independent than non-onlies (which might suggest greater self-confidence and leadership); and (b) more active and vigorous than non-onlies (which might suggest greater vigor and impulsiveness and less calmness). None of these effects was apparent, however.

The differences which did reach significance, or for which a trend was apparent, form a remarkably coherent picture. Onlies were found to be more cultured, mature, socially sensitive, and tidy than non-onlies, while non-onlies were found to be more sociable. In brief, only children look more like adults than do non-only children. This finding is not unexpected. Many investigators have theorized that onlies, growing up without siblings, should tend to model adult behavior more than that of other children; adults are the only other people in a single-child home.

Those few studies (including the present one) which have found that only children are intellectually superior to non-only children have speculated that this might be due to a linguistic modeling effect: Only children imitate their parents' (not their siblings') language behaviors and thus become verbally adept at an early age. This in turn aids their performance in school and on language-based intelligence tests. The present findings suggest that only children may tend to imitate other aspects of their parents' behavior, thus evidencing greater maturity, culture, tidiness, and social sensitivity than their high school peers. The observation that onlies are less sociable than non-onlies could be a "practice" effect -- only children lack siblings to interact with while growing up. This is a tenuous argument, however, since the very lack of siblings is thought to increase affiliative tendencies among only children. It is hard to imagine that affiliative tendencies are completely independent of sociability, but it is possible: onlies may tend to affiliate under stress, but remain less sociable under normal circumstances.

In summary, only children in the present study did not exhibit the drive and vigor sometimes ascribed to them. They did, however, appear to possess more adult characteristics than the non-only comparison group. The

evidence concerning one other factor associated with only children, independence, was mixed: only children did not differ from non-only children in leadership or self-confidence, but they were less sociable.

TABLE 2

Personality Characteristics

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Calmness	=		1 > 2		=		=	
Culture	1 > 2		1 > 2		=		1 > 2	
Impulsiveness	1 > 2		=		2 > 1		=	
Leadership	=		2 > 1		=		1 > 2	
Maturity	1 > 2	*	1 > 2	*	1 > 2		1 > 2	
Self-confidence	=		1 > 2		2 > 1		=	
Sociability	2 > 1	*	2 > 1	*	2 > 1		2 > 1	
Social sensitivity	1 > 2		1 > 2		=		1 > 2	
Tidiness	1 > 2		1 > 2		1 > 2		1 > 2	
Vigor	=		1 > 2		2 > 1		=	

* = Significant at .05 level.

Occupational Interests

As a part of the original TALENT data collection, an inventory was developed to survey the occupational interests of high school youth. The Interest Inventory consists of 205 items dealing with 122 occupations and 83 activities. Students were asked to respond to each item disregarding its educational requirements, salary, and social standing; responses were based on a 5-point scale ranging from "I would like this very much," to "I would dislike this very much."

The 205 items were divided (a priori) into 17 composite scales, each designed to measure interest in a broad occupational area. The scales are Physical Science, Biological Science, Public Service, Literary, Social Service, Artistic, Musical, Sports, Hunting/Fishing, Business Management, Sales, Computation, Office Work, Mechanical/Technical, Skilled Trades, Farming, and Labor.

Table 3 shows the relative interest expressed in each of these areas by only children and those from two-child families. Though few of the differences reached significance, some very interesting trends appear in the data. There are six areas for which no trends are evident: public service, social service, artistic, business management, sales, and farming. However, if we consider those areas in which at least three of the four groups showed the same directionality for onlies and non-onlies, the following pattern emerges: Only children have greater interest in physical science, biological science, music, computation, and literary areas, while non-only children have greater interest in sports, hunting/fishing, office work, mechanical/technical, skilled trades, and labor. This is a remarkably consistent set of findings and may represent the first time that onlies have been so neatly differentiated from non-onlies

in terms of their interests. It should be noted as well that this finding is not confounded with socio-economic status; SES has been partialled out in all analyses.

Why should only children score higher on white-collar, scientific, cerebral occupations while non-only children score higher on blue-collar, manual, outdoors activities? Two answers can be suggested. First, only children (at least in the present sample) performed at a higher intellectual level than non-only children. It could be expected, then, that they would tend to choose occupations calling for thought as opposed to labor. Second, it has long been postulated that only children receive an exaggerated amount of parental attention and encouragement to achieve. Although this parental drive may have negative effects (e.g., a disproportionate number of pressure-related mental disorders among only children), it may also instill in only children a desire to obtain the maximum possible education and a tendency to gravitate toward the more socially prestigious occupations.

TABLE 3

Occupational Interests

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Physical science, engineering, math	1 > 2		1 > 2		1 > 2		2 > 1	
Biological science and medicine	1 > 2		1 > 2	*	2 > 1		1 > 2	
Public service	2 > 1		=		1 > 2		2 > 1	
Literary-linguistic	1 > 2		1 > 2		1 > 2		1 > 2	
Social service	2 > 1		1 > 2		=		2 > 1	
Artistic	1 > 2		=		1 > 2		2 > 1	
Musical	2 > 1		1 > 2	*	1 > 2		1 > 2	
Sports	2 > 1		2 > 1		2 > 1		2 > 1	
Hunting and fishing	2 > 1		2 > 1		2 > 1		2 > 1	
Business management	2 > 1		1 > 2		=		1 > 2	
Sales	1 > 2		2 > 1		2 > 1		1 > 2	
Computation	2 > 1		1 > 2		1 > 2		1 > 2	
Office work	2 > 1		2 > 1		1 > 2		2 > 1	
Mechanical-technical	2 > 1		2 > 1		1 > 2		2 > 1	*
Skilled trades	2 > 1		2 > 1		2 > 1		2 > 1	*
Farming	1 > 2		=		2 > 1		2 > 1	
Labor	2 > 1		1 > 2		2 > 1		2 > 1	

* = Significant at .05 level.

Social Life

Four items of information collected in 1960 provide information on the social life of Project TALENT participants. These variables, which are presented in Table 4, were: percent of participants who were dating, age when they went on their first date among those who were dating, average number of dates per week, and a composite measure of the intensity of the participants' overall social life. While only one of the individual comparisons is statistically significant, a highly consistent pattern of trends is evident. In all 11 cases where differences occurred, the differences favored non-only children. This is significant by means of the sign test, $p<.001$.

Among those individuals who were dating there were no differences between only children and persons from two-child families in the age at which they started dating. However, a greater proportion of individuals from two-child families were dating, and, on the average, they were dating more frequently and had a more active social life. This trend, while at variance with Bonney's (1942) finding that only children may be more socially outgoing, is consistent with our finding, reported elsewhere in this chapter, that individuals from two-child families receive higher average scores on the TALENT sociability scale. Thus, it appears justified to state that onlies are a little less social, at least in terms of interactions with their peers in high school.

TABLE 4

Social Life

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Liff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Percent who were dating	2 > 1		2 > 1		2 > 1		2 > 1	
Age when went on first date (among those who were dating)	=		=		=		=	
Average number of dates per week	2 > 1		2 > 1		=		2 > 1	
Intensity of social life	2 > 1	*	2 > 1		2 > 1		2 > 1	

* = Significant at .05 level.

Health-Related

Somewhat paradoxical predictions can be made regarding the relative health of only and non-only children. On the one hand, only children do not have to compete with siblings for (perhaps scarce) family resources. Thus they are most likely to receive the benefits of optimal nutrition and medical care. On the other hand, there is evidence (reported earlier) that births subsequent to the first are easier on the mother, and that parents sometimes cease having children if the first one is physically or mentally disadvantaged. Other factors may be operative as well. Large numbers of pregnancies may lead to "uterine fatigue" in a woman; communicable diseases tend to linger in larger families as they get passed from one member to another. On balance, large families are probably somewhat disadvantaged with respect to smaller families in terms of health; within small families, however, the costs and benefits of being an only child may be roughly equivalent.

The findings from the present study are at least consistent with this latter "null" hypothesis: only children did not differ consistently from the average of two-child families in reported health. Ninth and twelfth graders were asked in 1960 to rate their health (a) up to the age 10, and (b) during the three years preceding the TALENT survey. They were also asked a series of specific health-related questions (concerning, for example, their vision, hearing, illness history, etc.); the answers to these were combined for the present analysis into a single composite health status measure. Finally, ninth graders were asked in the 11 year follow-up whether they were suffering from any activity-limiting health problem.

Table 5 shows the results when onlies were compared to non-onlies on these four variables. Of 14 possible differences, non-onlies reported better health in six cases (two were significant); onlies reported better health in four cases (one was significant); and the two groups were equivalent in four cases. It is clear from this pattern of results that neither group is particularly advantaged with respect to health. The only sub-pattern discernible in Table 5 is a tendency for non-only males to have reported better health in 1960. If this trend is real, however, it seems to have disappeared by the time of the follow-up survey.

The lack of health differences between only children and those from two-child families is not really surprising. As noted above, effects of family size and birth order on health may be visible only in larger familes, where ease of birth, uterine fatigue, and competition for resources can become critical factors. The one hypothesis that could best distinguish onlies from twos - the notion that parents would stop at one child if he/she were physically disadvantaged - was not corroborated in the present study.

TABLE 5

Health-Related

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Health up to age 10	2 > 1		=		2 > 1	*	2 > 1	**
Usual health during past 3 years	1 > 2		=		2 > 1		2 > 1	
Composite health status	=		1 > 2		1 > 2		2 > 1	
Chronic health problems$^{\Delta}$	1 > 2	*	N.A.		=		N.A.	

Δ = 11 year follow-up question.

N.A. = Not applicable. Was not asked of this grade/sex group.

* = Significant at .05 level.

** = Significant at .01 level.

Activities

Data were collected in 1960 on the extent to which students engaged in any of 29 different activities; follow-up data were gathered when the respondents were about 29 concerning two additional activities. Examples of high school activities include sports, hobbies, reading, and crafts; follow-up respondents were queried on their newspaper and magazine reading habits.

The full list of activities is shown in Table 6, along with the differences between only and non-only children on each activiity. As has been our custom, we will report trends or patterns of results rather than simply listing the significant findings. For the present set of results, directionality will be ascribed if any of the following criteria is met:

1. At least three of the four groups show the same directionality.
2. Two groups show the same directionality, and neither of the other two groups shows opposite directionality.
3. One group shows significant directionality, and none of the other groups shows opposite directionality.

We feel these standards are fair, for two reasons. First, the patterns emerging when the data are viewed in this way are very coherent. Second, because of the number of cases where only/non-only equivalency is expected (e.g., girls in athletics; boys in cooking), it would be overly strict to demand (say) three same-direction groups before ascribing directionality.

Using these criteria, Table 6 can be summarized as follows:

1. Only children participated to a greater extent than non-only children in

a) extracurricular activities
b) extracurricular reading
c) collecting (stamps, coins, etc.)
d) clubs
e) hobbies
f) raising animals/pets
g) acting, singing, dancing
h) music
i) photography

2. Non-only children participated more than only children in

a) sports
b) high school leadership roles
c) team activities (baseball, basketball, etc.)
d) hunting/fishing
e) woodworking
f) cooking
g) jewelry, pottery-making, etc
h) electrical/electronic crafts

3. At age 29, onlies spent more time than non-onlies reading newspapers and news magazines.

As mentioned above, this pattern suggests some consistent and coherent differences between only and non-only children. Only children tended to engage in activities that are solitary (collecting), intellectual (reading), and artistic (music, drama, photography). Non-only children tended to engage in activities that are group-oriented (team sports) and practical (woodworking, cooking). There are some exceptions to this pattern, but overall the findings are remarkably uniform.

These results are reminiscent of the findings with respect to the sample's occupational interests. It will be recalled that only children looked forward to pursuing scientific, artistic, intellectual careers, while non-only children tended to lean towards the manual trades. These career aspirations appear to be nicely matched with the students' high

school activities. And although we have tried scrupulously to avoid popular stereotypes of the only child, the data on activities tend to reinforce one such stereotype: that of the only child as a "loner" or social isolate. Other findings in this study suggest that onlies are in fact somewhat less sociable than non-onlies. The extent to which only children perceive this and are troubled by it remains to be seen, however.

TABLE 6

Activities

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
High school leadership roles	2 > 1		2 > 1		2 > 1		1 > 2	
Number of clubs belonged to in past 3 years	1 > 2		1 > 2		=		1 > 2	
Variety of extracurricular activities	1 > 2		1 > 2		1 > 2		1 > 2	
Degree of participation in extracurricular activities	1 > 2		1 > 2		1 > 2		1 > 2	
Athletic team memberships in past 3 years	=		=		2 > 1		1 > 2	
Frequency of playing baseball, football, basketball in past 3 years	2 > 1	***	=		2 > 1	*	=	
Level of participation in sports	2 > 1		2 > 1		2 > 1		2 > 1	
Athletic awards since 9th grade	=		=		2 > 1		2 > 1	
Amount of extracurricular reading	1 > 2	*	1 > 2	**	1 > 2		1 > 2	
Variety of hobbies	2 > 1		1 > 2		1 > 2		2 > 1	
Degree of participation in hobbies	1 > 2		1 > 2	*	1 > 2		2 > 1	
Frequency of raising/caring for animals or pets in past 3 years	1 > 2		1 > 2		=		=	

TABLE 6 (continued)

Activities

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Frequency of drawing, painting, decorating, or sculpting in past 3 years	=		=		=		=	
Art awards received since 9th grade	=		=		1 > 2		=	
Frequency of auto or mechanical repairs in past 3 years	=		=		=		2 > 1	
Frequency of collecting rocks, coins, stamps, etc. in past 3 years	1 > 2		1 > 2		1 > 2		1 > 2	
Frequency of cooking in past 3 years	2 > 1	*	=		=		=	
Frequency of making jewelry, pottery, or leatherwork in past 3 years	=		=		=		2 > 1	*
Frequency of making/repairing electrical equipment in past 3 years	2 > 1	*	=		=		=	
Frequency of gardening/raising flowers or vegetables in past 3 years	2 > 1		1 > 2		1 > 2		2 > 1	

TABLE 6 (continued)

Activities

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Frequency of hunting/fishing in past 3 years	2 > 1		=		2 > 1		=	
Frequency of doing metal work in past 3 years	=		=		=		2 > 1	
Frequency of building model ships, planes, cars, etc. in past 3 years	2 > 1		=		1 > 2		1 > 2	
Frequency of public acting, singing, or dancing in past 3 years	=		1 > 2		1 > 2		=	
Number of music awards received since 9th grade	=		1 > 2	*	=		1 > 2	
Frequency of working with photo equipment in past 3 years	=		=		=		1 > 2	*
Frequency of sewing, knitting, crocheting, or embroidering in past 3 years	=		=		=		=	
Frequency of woodworking or cabinetmaking in past 3 years	=		=		2 > 1		2 > 1	
Number of awards received since 9th grade in student govt., boy or girl scouts, YMCA, YWCA, etc.	2 > 1		1 > 2		=		1 > 2	
How often read newspaper Δ	N.A.		=		N.A.		1 > 2	

TABLE 6 (continued)

Activities

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Amount of time spent reading newspapers or newsmagazines Δ	1 > 2		N.A.		1 > 2		N.A.	

Δ = 11 year follow-up question.

N.A. = Not applicable. Was not asked of this grade/sex group.

* = Significant at .05 level.

** = Significant at .01 level.

*** = Significant at .001 level.

Education/Academic Achievement

The bulk of the evidence in past studies with respect to education and academic achievement has been that children from small families exceed those from large families. This may in part reflect the higher intelligence of the former, although one study (Chopra, 1966) found the relationship to hold even when intelligence was partialed out. Achievement needs in general have also been found to be greater among those from small families. This may account for part of the educational achievement differences.

While this study revealed few individually significant differences between onlies and those from two-child families on academic and educational achievement, the pattern of differences (onlies higher in 48 out of 56 cases) was again significant by the sign test, $p < .001$. In addition, all of the individually significant differences favored onlies. The variables examined under this topic included 16 from the High School Information Blank and five from the 11 year follow-up, as shown in Table 7.

On four variables significant differences appeared across two groups, a generally rare occurrence in this study. The four variables are:

-Proportion of participants in an academic high school curriculum

-Self-perception of reading skills

-Self-perception of writing skills

-Study habits and attitudes

If there is a pattern here, it seems to involve a combination of higher academic skills, particularly verbal skills, and a greater need to achieve academically. High school grades were significantly higher for onlies in one group (ninth-grade females) also, reinforcing this pattern. The only significant difference beyond high school relates to the greater amount of

education expected among twelfth-grade female onlies. The follow-up data collection showed this group to have received significantly more education at age 29, suggesting that the high school expectations had been fulfilled.

Thus, in general the findings support those of earlier studies in the sense that they show that offspring from smaller families attain higher educational and academic outcomes than those from larger families. What has been added is evidence that this pattern extends even to one-child families. The reasons onlies outscore non-onlies seem to derive from their greater cognitive abilities (a finding of this study which runs counter to most past findings) and their greater achievement orientation. It should be remembered, however, that only a few significant differences were found among the many variables and groups examined, and that while the general pattern of differences shows onlies outscoring non-onlies, most differences are slight.

TABLE 7

Educational/Academic Achievement

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Proportion of participants in an academic high school curriculum	1 > 2		1 > 2		1 > 2	*	1 > 2	*
High school grades	1 > 2	*	1 > 2		1 > 2		1 > 2	
Self-perception of reading skills	1 > 2		1 > 2	*	1 > 2		1 > 2	**
Self-perception of writing skills	1 > 2	*	1 > 2		1 > 2		1 > 2	*
Study habits and attitudes	1 > 2	**	1 > 2	**	1 > 2		1 > 2	
Number of hours of study per week	1 > 2		1 > 2		1 > 2		1 > 2	
Number of science awards received since ninth grade	=		=		=		=	
Number of math awards received since ninth grade	=		=		=		=	
Number of foreign language awards received since ninth grade	=		=		=		=	
Number of awards for writing, debate, or oratory received since ninth grade	=		=		=		=	
Degree of agreement that "success in life depends upon ability and effort, not how much education one has"	2 > 1		2 > 1		=		2 > 1	

TABLE 7 (continued)

Education/Academic Achievement

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Degree of agreement that "girls should go to college only if they plan to use their education on a job"	=		=		=		1 > 2	
Degree of agreement that "more girls should go to college because the country is going to need more trained women to fill important jobs"	1 > 2		1 > 2	*	=		=	
Degree of agreement that "it is not necessary to have a college education in order to earn a good salary or be a leader in the community"	2 > 1		1 > 2		=		2 > 1	
Amount of education expected	1 > 2		1 > 2	**	1 > 2		1 > 2	
Amount of education parents want participant to have	1 > 2		1 > 2		1 > 2		=	
Amount of education completed Δ	1 > 2		1 > 2	**	1 > 2		1 > 2	
Attended non-college post-secondary school Δ	1 > 2		N.A.		2 > 1		N.A.	
College program was to prepare participant for a specific occupation Δ	2 > 1		1 > 2		1 > 2		2 > 1	

TABLE 7 (continued)

Education/Academic Achievement

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Participant attended college Δ	1 > 2		1 > 2		1 > 2		1 > 2	
High school considered of value "all things considered" Δ	N.A.		1 > 2		N.A.		=	

Δ = 11 year follow-up question.

N.A. = Not applicable. Was not asked of this grade/sex group.

* = Significant at .05 level.

** = Significant at .01 level.

Marriage and Childbearing

As a part of both the 1960 and the eleven year follow-up surveys, data were collected about the project TALENT participants' expectations and outcomes relative to marriage and childbearing. Table 8 presents the results obtained when only children and individuals from two-child families were compared on the 12 variables which fall into this category. Of the 12 variables, all but two were collected during the eleven year follow-up survey.

With the exception of one varible, number of children, the results for this cateogry of variables is much like that for most of the other categories. That is, while there are few differences which are statistically significant, a number of consistent trends occur. When they were in high school, individuals from two-child families expected to marry younger and to have more children than onlies. The accuracy of these expectations is reflected in two questions asked during the eleven year follow-up survey. With regard to the number of children the TALENT participants had parented, one of the most strongly supported findings of this entire study is that individuals from two-child families had more children than did only children. This finding was statistically significant for three of the four groups. There is no consistent trend across the four groups with regard to the age at first (or only) marriage among those ever married. Reference to Table 8 indicates that the two ninth grade groups were consistent with each other and differed from the two twelfth grade groups. However, since it is difficult to attribute real cohort differences to groups born just three years apart, it seems reasonable to state that age at marriage was not different for the individuals included in this study. In agreement with this finding is the fact that there were no trends in

the age of the spouse at the time of the participants' first marriage. However, for ninth graders, the only group of whom the question was asked, the spouses of only children tended to have more education than did the spouses of persons from two-child families. This finding is consistent with our finding, reported elsewhere in this chaper, that only children had completed more education than had individuals from two-child families.

The probability of a person marrying by about age 29, or of marrying more than once by that age, was not related to whether he/she was an only child or from a two-child family. But, it appears that individuals from two-child families were more likely to be divorced by age 29. Finally, there are three follow-up questions, asked only of former ninth graders, related to their expected and ideal family sizes at about age 29. With regard to their expected ultimate family size, both males and females from two-child families expected to have more children of their own than did only children. This is of course in agreement with the finding, presented above, that by about age 29, individuals from two-child families did in fact have more children. However, when these same former ninth graders were asked to specify their own best possible family size and the ideal family size for a typical couple, different results were obtained. In these two situations female onlies gave larger numbers than did females from two-child families. The results were reversed for males with individuals from two-child families obtaining larger averages. Since these questions were only asked of ninth graders it is not clear if these results represent real sex differences.

To summarize:

- Only children expect to, but do not in fact, marry at an older age.

- Only children expect to and do in fact have smaller numbers of children, and they further expect their ultimate family sizes to be smaller.
- The spouses of only children have greater amounts of education, but do not differ in average age from the spouses of non-onlies.
- Only children are less likely to have divorced by age 29.

TABLE 8

Marriage and Childbearing

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Age when participant expects to marry (asked when in high school)	1 > 2	*	1 > 2		1 > 2		1 > 2	
Number of children expected (asked when in high school)	1 > 2		2 > 1		2 > 1		2 > 1	
Proportion of participants ever married Δ	2 > 1		1 > 2	*	2 > 1		=	
Proportion of those ever married who were divorced Δ	2 > 1		2 > 1		=		2 > 1	
Number of times married Δ	=		=		=		=	
Age when first married among those ever married Δ	2 > 1		1 > 2		2 > 1		1 > 2	
Age of spouse when married among those ever married Δ	2 > 1	*	=		1 > 2		=	
Spouse's amount of education among those ever married Δ	1 > 2		N.A.		1 > 2		N.A.	
Number of children Δ	2 > 1	*	2 > 1	*	2 > 1		2 > 1	**
Number of children expected (asked on follow-up) Δ	2 > 1		N.A.		2 > 1		N.A.	
Participant's best possible family size Δ	1 > 2	*	N.A.		2 > 1		N.A.	
Ideal family size for typical couple Δ	1 > 2		N.A.		2 > 1		N.A.	

TABLE 8 (continued)

Marriage and Childbearing

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Δ = 11 year follow-up question.								
N.A. = Not applicable. Was not asked of this grade/sex group.								
* = Significant at .05 level.								
** = Significant at .01 level.								

Work-Related

This chapter addresses the question: What are the effects of being an only child on work-related activities? Data are available on 13 variables related to this question for all four groups in the sample, and on an additional nine variables for the twelfth-grade groups. Results of the comparisons are presented in Table 9. The first eight variables come from the Student Information Blank administered while the participants were in either the ninth or twelfth grade. The last 14 variables are from the follow-up data collection done while participants were approximately 29.

Of the 68 cells where differences might appear in Table 9, onlies exceeded non-onlies in 22 cases, were equal in 28 cases, and were exceeded by non-onlies in 18 cases. This is a numerically balanced picture. However, the pattern varies between the first four variables, reflecting work activities in high school (where non-onlies exceeded onlies), and the other variables, reflecting career plans and achievement (where onlies exceeded non-onlies).

One explanation for the higher scores of non-onlies on high school work activities might be that those from two-child families had a greater economic need to earn money while in high school. Another might be that those from two-child families had more contacts, through their sibling and their sibling's friends, which allowed them to obtain jobs. Three of the individual items (2-4) which contributed to the work activities composite are presented individually to show the scores for some of the differences found in the composite.

Two other items revealed significant differences between participants from one-child families and those from two-child families. The first pertains to ninth-grade females. These young women, if from one-child

families, had more definite occupational plans. This may suggest greater career ambition, or perhaps a higher awareness of the need to work. Perhaps these young women conform to the Bossard and Boll (1956) perceptions that single-child families stress ambition, achievement, competition, and planning, while larger families stress cooperation, conformity, and consensus (although two-child families are hardly "large"). Any such conclusion should be tempered by the many variables which failed to reveal this difference, however, and by the failure of the differences to appear among participants from the twelfth-grade female group or either of the male groups.

Finally, twelfth-grade males from one-child families were more likely to have "moonlighted", that is, to have "held one or more extra jobs in addition to [their] regular job." This finding appears to fit in with no particular pattern or hypothesis.

To summarize, then, the chief finding concerning work-related activities is that only and non-only children are remarkably similar. Those from two-child families are somewhat more likely to work and earn money in high school; female only children have more definite career plans. But the number of significant differences is small in light of the many variables examined, and on balance, little evidence was found suggesting that only children differ from their two-child family counterparts on work-related activities.

TABLE 9

Work-Related

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Work activities composite@	2 > 1	***	2 > 1		2 > 1		2 > 1	***
Number of hours/week participant spent doing chores around the house	2 > 1		2 > 1		2 > 1		2 > 1	
Age when participant began earning money	2 > 1		2 > 1		2 > 1		2 > 1	
Number of hours per week participant worked for pay during the school year	2 > 1		2 > 1		=		2 > 1	
Desire to make a career in the military service	=		1 > 2		1 > 2		2 > 1	
Definiteness of occupational plans	1 > 2	**	1 > 2		=		=	
Expected earnings 20 years after high school	1 > 2		1 > 2		2 > 1		=	
Expected financial well-being in lifetime	1 > 2		=		1 > 2		1 > 2	
Participant is employed Δ	1 > 2		1 > 2		=		1 > 2	
Participant is a housewife Δ	=		1 > 2		N.A.		N.A.	
Composite measure of job satisfaction Δ	1 > 2		=		1 > 2		=	
Fit between job and long-range plans Δ	=		=		=		=	

TABLE 9 (continued)

Work-Related

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Earnings (adjusted to hourly rate)Δ	2 > 1		1 > 2		1 > 2		=	
Participant has "moonlighted" @ Δ	N.A.		1 > 2		N.A.		1 > 2	*
Participant has changed careers Δ	N.A.		=		N.A.		=	
Participant has been retrained Δ	N.A.		1 > 2		N.A.		1 > 2	
Participant has been in the Peace Corps Δ	N.A.		=		N.A.		=	
Participant has been in Vista Δ	N.A.		=		N.A.		=	
Participant has lived overseas Δ	N.A.		1 > 2		N.A.		=	
Participant has lived in a commune Δ	N.A.		=		N.A.		=	
Participant has been a "dropout from society" Δ	N.A.		=		N.A.		=	
Participant has been on welfare Δ	N.A.		=		N.A.		=	

@ = See text for explanation.

Δ = 11 year follow-up question.

N.A. = Not applicable. Was not asked of this grade/sex group.

* = Significant at .05 level.

** = Significant at .01 level.

*** = Significant at .001 level.

Mobility

Twelfth graders were asked two questions in the follow-up survey concerning their mobility since high school. The first question asked how many times they had moved since high school, and the second question asked how far they had moved since high school.

Table 10 presents the findings based on these questions. It can be seen that there were no significant differences between only children and the average of two-child families in terms of their mobility. Further, there are no apparent trends or patterns in the data: the mobility of onlies was greater in one instance, less in two instances, and equivalent in one instance to that of non-onlies.

There is little prior work with which the present finding can be directly compared. Claudy, Gross, and Strause (1974) noted that children from large families tend to be less mobile than those from small families; that trend was not evident in the present data. Although one might argue that two-child families are not large, a better way of conceptualizing the issue might be to ask how large a family must be before differences appear between only and non-only children. The present study was limited to two-child families as a comparison group, but it is clear that such families are "large" enough to lead to some differences between onlies and non-onlies (see, for example, the chapter on cognitive abilities).

TABLE 10

Mobility

Variable	9th Grade Females		12th Grade Females		9th Grade Males		12th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Number of times moved since high school Δ	N.A.		2 > 1		N.A.		=	
Distance moved since high school Δ	N.A.		1 > 2		N.A.		2 > 1	

Δ = 11 year follow-up question.

N.A. = Not applicable. Was not asked of this grade/sex group.

CHAPTER V

CONCLUSIONS AND IMPLICATIONS

From a statistical point of view the results of this study can be summarized rather sufficiently by stating that there were few individually significant differences between outcomes for only children and individuals from two-child families. While such a statement is technically accurate, it does not do justice to what we feel are a number of important trends exhibited by our results, several of which were significant in the aggregate. Viewing the entire set of results as a whole, it appears that the only child is not "disadvantaged" relative to individuals from two-child families, and may, in fact, be in a slightly advantageous position. Our reasons for reaching this conclusion can perhaps best be explained by the following summary of results. Relative to individuals from two-child families, only children:

- Received higher scores on cognitive tests;
- Appeared to be more cultured, mature, socially sensitive, and tidy, but less sociable;
- Were more interested in white-collar, scientific, cerebral occupations and activities and less interested in blue-collar, manual, or outdoor occupations and activities;
- Had a less intense social life;
- Did not differ in terms of health;
- Spent more time in solitary, intellectual and artistic activities and less time in group-oriented and practical activities;
- Were more academically oriented in high school and showed greater academic achievement by age 29;
- Married better-educated spouses and had fewer children;
- Worked less during high school, but had higher long-term occupational and financial expectations;

- Were more often employed at the time of the follow-up, but received approximately equal pay;
- Did not differ in terms of mobility.

While none of the differences was large in absolute terms, the total picture which emerges is one in which the only child appears to be more academically oriented and "adult like," though less social and more of a loner. It is rather difficult to conceive of such a person as disadvantaged. However, this picture is consistent with some of the popular stereotypes of the only child, though we have no evidence regarding the most common only-child stereotype, that of the only child being a spoiled child.

This study differed from most previous investigations of only children in finding that only children are intellectually and academically advantaged with respect to their non-only peers. This finding is even more remarkable in light of the fact that the least sensitive set of comparisons possible was carried out in that only children were contrasted with those from two-child families. Two-child families cannot, by any standards, be considered large. The onlies in the current study might have appeared even more advantaged if they had been compared to children from sibships of six, for example.

We have already alluded to the likely explanation for the results obtained in this study - both samples came exclusively from families in which both parents were present. Although it is known that a disproportionate number of onlies come from single-parent families, and although at least one investigator has argued that this accounts for previously-found deficits among onlies (Falbo, 1979), ours appears to be the first large-scale study actually to control for this factor. The results, as

we have seen, are enlightening. Onlies who have grown up in two-parent homes simply do not show the intellectual deficits that have been ascribed to only children for years.

These "deficits" led Zajonc (1976; Zajonc and Markus, 1975) to expand the conluence model of family size and birth order effects. He postulated that only (and last) children, having no siblings to tutor, would suffer intellectually relative to what the original confluence model would predict. The present findings suggest that this "tutoring" explanation may be unnecessary, at least for onlies. It is still possible, of course, that lack of tutoring opportunities may help explain last-child deficits, and that even two-parent only children are slightly below the original confluence prediction; the present study could not examine these questions.

Within the context of the long history of research on the only child (and in addition to the substantive findings), this study seems to be of particular importance because of several methodological strengths related to the specification and selection of the sample:

- The sample is large and representative;
- Both sexes are included;
- Two grade cohorts are included;
- Data were collected during young adulthood;
- The variables cover a wide range of areas;
- Parental SES is carefully controlled for;
- Only children and first borns are not grouped together;
- A potential problem, the overrepresentation of onlies among one-parent families, is eliminated.

For all of these reasons we feel this study provides "better" results

than the vast majority of studies of the only child.

The most important implications of this study are in terms of the advice and counsel which might be given to potential parents. Based on the results of this study, we can see no good reason for not having a single child. A childless couple who are considering having children should have no concern about having a planned only child. Likewise, a couple with a single child who are considering having a second child should base their decision on factors other than a desire to avoid raising an only child. We found no evidence of major negative consequences of being an only child.

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THE CONSEQUENCES OF BEING AN ONLY CHILD: AN ANALYSIS OF PROJECT TALENT DATA

John G. Claudy
William S. Farrell, Jr.
Charles W. Dayton

January, 1980

American Institutes for Research
Post Office Box 1113
Palo Alto, California 94302

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SUPPLEMENT

LIFE SATISFACTION

In the main body of the final report the discussion emphasized outcome variables of an objective rather than a subjective nature. In this supplement we discuss responses to a series of questions related to the respondents' satisfaction with their lives at the time of the eleven-year follow-up survey. As such, these questions are entirely subjective and reflect the perceptions rather than the realities of the respondents' lives. While some objective reality must underlie one's perceptions in all but the most extreme cases, the responses we examine here are indirect and highly filtered reflections of that reality. But actual behavior is necessarily based on the individual's perception of self, condition, and environment rather than objective reality. Thus, the satisfaction of only children and individuals from two-child families with their lives may provide information on deep seated, but non-obvious, differences between the two groups.

As a part of the eleven-year follow-up survey of persons who had been ninth graders in 1960, respondents were asked to rate 15 areas thought to be related to life satisfaction on each of two scales. The first scale asked about the importance of each area; the second scale asked about the respondents' satisfaction in that area. The actual questions used to collect these data are presented on the next page.

As with the prior analyses, comparisons were made between only children and individuals from two-child families and were limited to persons living with both parents at the time of the initial Project TALENT data collection in 1960. Data for males and females were analyzed separately. In order to facilitate statistical analyses, the alphabetic response categories were

62. We have listed below 15 areas which could be related to how satisfied you are with your life. Please rate how important each of these areas is to you.

A. Of the greatest importance to me
B. Moderately important to me
C. Not very important to me

A	B	C		D	E	F	G	H
○	○	○	a. Material well-being, standard of living, financial security.	○	○	○	○	○
○	○	○	b. Health, health care, and personal safety.	○	○	○	○	○
○	○	○	c. Personal relationships with husband or wife (boyfriend or girlfriend).	○	○	○	○	○
○	○	○	d. Having and raising children.	○	○	○	○	○
○	○	○	e. Personal relationships with parents, siblings, and other relatives.	○	○	○	○	○
○	○	○	f. Personal relationships with close friends.	○	○	○	○	○
○	○	○	g. Helping others (not including relatives and friends); church, club, and volunteer activities.	○	○	○	○	○
○	○	○	h. Political and civic activities.	○	○	○	○	○
○	○	○	i. Learning; increasing knowledge and ability.	○	○	○	○	○
○	○	○	j. Personal understanding, maturity, insight and inspiration.	○	○	○	○	○
○	○	○	k. Occupation or job.	○	○	○	○	○
○	○	○	l. Personal accomplishment; using creativity.	○	○	○	○	○
○	○	○	m. Socializing, communicating, entertaining others.	○	○	○	○	○
○	○	○	n. Participation in active recreation (sports, travel, hobbies, etc.).	○	○	○	○	○
○	○	○	o. Participation in observational and passive recreation (reading, TV, movies, etc.).	○	○	○	○	○
A	B	C		D	E	F	G	H

63. Now please go back and rate how satisfied you are with your life in each of these 15 areas.

D. Extremely well satisfied
E. Well satisfied
F. Not exactly satisfied; not exactly dissatisfied
G. Somewhat dissatisfied
H. Very dissatisfied

converted to numbers (3,2,1 and 5,4,3,2,1) and treated as values on an interval scale.

Table S-1 presents the results of the analyses of differences in the level of importance assigned to each of the 15 areas of life satisfaction while Table S-2 presents the results of the analyses of differences in satisfaction with each of the 15 areas. From Table S-1 it is clear that there are few areas where only children and individuals from two-child families differ in their views of what is important. Among females the only area for which we found a difference was in having and raising children;

TABLE S-1

Importance of Areas of Life Satisfaction

Variable	9th Grade Females		9th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Material well-being, standard of living, financial security.	=		=	
Health, health care, and personal safety.	=		=	
Personal relationships with husband or wife (boyfriend or girlfriend).	=		=	
Having and raising children.	2 > 1	**	2 > 1	
Personal relationships with parents, siblings, and other relatives.	=		2 > 1	*
Personal relationships with close friends.	=		=	
Helping others (not including relatives and friends); church, club, and volunteer activities.	=		=	
Political and civic activities.	=		1 > 2	
Learning; increasing knowledge and ability.	=		=	
Personal understanding, maturity, insight and inspiration.	=		=	
Occupation or job.	=		=	
Personal accomplishment; using creativity.	=		=	
Socializing, communicating, entertaining others.	=		=	
Participation in active recreation (sports, travel, hobbies, etc.).	=		=	
Participation in observational and passive recreation (reading, TV, movies, etc.).	=		=	

* - Significant at .05 level.
** - Significant at .01 level.

TABLE S-2

Satisfaction with Areas of Life Satisfaction

Variable	9th Grade Females		9th Grade Males	
	Direction of Diff	Signif of Diff	Direction of Diff	Signif of Diff
Material well-being, standard of living, financial security.	=		=	
Health, health care, and personal safety.	2 > 1	***	=	
Personal relationships with husband or wife (boyfriend or girlfriend).	=		=	
Having and raising children.	=		2 > 1	
Personal relationships with parents, siblings, and other relatives.	2 > 1		=	
Personal relationships with close friends.	2 > 1	*	=	
Helping others (not including relatives and friends); church, club, and volunteer activities.	=		1 > 2	
Political and civic activities.	1 > 2	*	1 > 2	
Learning; increasing knowledge and ability.	1 > 2		2 > 1	
Personal understanding, maturity, insight and inspiration.	1 > 2		=	
Occupation or job.	=		=	
Personal accomplishment; using creativity.	=		=	
Socializing, communicating, entertaining others.	=		=	
Participation in active recreation (sports, travel, hobbies, etc.).	1 > 2		=	
Participation in observational and passive recreation (reading, TV, movies, etc.).	1 > 2			
* - Significant at .05 level. *** - Significant at .001 level.				

non-onlies rated this area as more important than did onlies and the difference was statistically significant. Among males this difference, while not significant, was in the same direction. This self-report that children are more important to individuals from two-child families is consistent with the finding, reported in Table 8 of the main report, that individuals from two-child families had more children, since we would expect persons for whom children are more important to have more children. Two other areas showed differences for the males. Personal relationships with parents, siblings, and other relatives were more important for individuals from two-child families, while political and civic activities were more important to only children.

In terms of their actual level of satisfaction with the 15 areas of life satisfaction, females present a rather anomalous picture. Female only children and females from two-child families differed on eight of the 15 areas (three of these differences were statistically significant). However, there is no consistent trend among these differences. Female onlies gave higher satisfaction ratings in five areas and females from two-child families gave higher ratings in the other three. Only children were more satisfied with those aspects of their lives related to political and civic activities; learning, increasing knowledge and ability; personal understanding, maturity, insight and inspiration; and with both their active and passive recreational activities. Two of the three differences favoring females from two-child families are more coherent. These two areas, personal relationships inside the family and personal relationships outside of the family, form a cluster which we might call interpersonal relations. That females from two-child families were more satisfied with their interpersonal relations with persons outside their immediate families is consistent with our earlier finding that they were more

sociable and had more active social lives. Lastly, females from two-child families were more satisfied with their health. Since no differences were found in terms of actual health status, there appears to be no logical explanation for this finding.

Males differed less than did females with regard to their satisfaction with the 15 areas of life satisfaction. Male only children obtained higher mean scores on helping others, church, club and volunteer activities; and on political and civic activities. While these two areas do appear to be somewhat similar, there is no good theoretical or logical reason why onlies should score higher. Males from two-child families obtained higher means on having and raising children; and on learning, increasing knowledge and ability. The satisfaction differences on having and raising children is consistent with our finding that individuals from two-child families attached more importance to children and had more children. However, the differences on learning, increasing knowledge and ability, which is at variance with the difference for female, is unexpected.

In general, these supplemental analyses present a picture of the only child which is congruent with the findings of the main study. Only children and individuals from two-child families are not greatly different in the importance they attach to or their satisfaction with most of the fifteen areas of life satisfaction. Several of the differences are consistent with other results, especially in the areas of interpersonal relationships and child-rearing. The results of the supplemental analyses, then, do not change the conclusions and implications of the main report.